DOCUMENT RESUME

ED 356 239 TM 019 648

AUTHOR Barton, Paul E.
TITLE What Americans Should Know: Information Needs for Setting Education Goals. A Policy Information Proposal.
INSTITUTION Educational Testing Service, Princeton, NJ. Policy Information Center.
PUB DATE Jun 91
NOTE 22p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Accountability; *Achievement Tests; Curriculum Development; Cutting Scores; *Educational Objectives; Educational Policy; Elementary Secondary Education; *Evaluators; *Information Needs; Literacy; National Programs; Policy Formation; Position Papers; *Program Implementation; Scoring
IDENTIFIERS America 2000; Educational Information; *Goal Setting; *National Education Goals 1990

ABSTRACT

This proposal suggests the kinds of information that could be developed to inform choices and answer questions related to the national education goals and their specific targets. An important approach to providing this kind of information is being undertaken by the National Assessment Governing Board, which has used panels of judges to set achievement levels for grades 4, 8, and 12 using a methodology often used to set passing scores on tests. In tandem with this effort, the following proposals are offered, not for accountability to the national goals, but to help reach them: (1) using panels of judges to set achievement levels; (2) defining goals as proportions of student reaching National Assessment of Educational Progress "anchor points"; (3) identifying schools that exceed expectations; (4) learning what teachers expect; (5) choosing levels necessary for a high achievement curriculum; and (6) setting goals for literacy. Progress toward the goals for the year 2000 will require this kind of information to establish believable targets to which people can commit. Three tables provide information about national achievement, and one figure illustrates levels of mathematics proficiency. (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED356239

A Policy Information Proposal

WHAT AMERICANS SHOULD KNOW:

INFORMATION NEEDS FOR SETTING EDUCATION GOALS

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

[X] This document has been reproduced as received from the person or organization originating it.

[ ] Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. COLEY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

POLICY INFORMATION CENTER
Educational Testing Service
Princeton, NJ 08541

June 1991

TM019648

BEST COPY AVAILABLE

Copyright © 1991 by Educational Testing Service.

A Policy Information Proposal

What Americans Should Know:

Information Needs for Setting Education Goals

Paul E. Barton

Policy Information Center
Educational Testing Service
Princeton, NJ 08541

June 1991

Preface

In the course of our work at the Policy Information Center, we deal with information we need and don't have, as well as what we do have. So from time to time, we make a "policy information proposal." Last year, it was Skills Employers Need: Time to Measure Them. This year, we propose an examination of the information needed to set specific education achievement goals and targets, and interim goals and targets.

Under the aegis of the National Education Goals Panel, an extensive system has been created to track progress toward the national goals. Yet it takes different kinds of information to help the education community decide on specific goals and targets. It is this piece of business that is our concern, and we hope at least to stimulate a discussion of these information needs.

I am indebted to the following at ETS for reviews and other assistance: Richard Coley, Archie Lapointe, Steve Koffler, Garlie Forehand, Ann Jungeblut, and Irwin Kirsch. None, however, bear responsibility for the views contained herein. Carla Cooper provided desktop publishing services. Joanne Pfleiderer did the editing.

Paul E. Barton
Director

Contents

- Preface ii
- Introduction & Summary 1
- Panels of Judges to Set Achievement Levels 2
- Goals as Proportions of Students Reaching NAEP "Anchor Points" 4
- Schools That Exceed Expectations 5
- What Teachers Expect 6
- Levels Necessary for a High Achievement Curriculum 8
- Setting Goals for Literacy 8
  - Occupations and Literacy 10
  - Literacy Audits 14
  - Literacy for Living 15

Introduction & Summary

Our country has set national educational goals for the year 2000. A National Education Goals Panel is in place and will issue "report cards" each September. The president has proposed an education strategy, America 2000, and legislation supporting it has been introduced in the Congress.

These national education goals are, of necessity, very general. Throughout the nation, educators, policymakers, and the public will be struggling, if all goes as intended, with translating general goals into specific targets.

How much do we want Americans to learn in the education system? How literate do they need to be? What are realistic targets, as well as ideal ones, we should move toward? How can policymakers communicate why they think the chosen targets are desirable ones? How much literacy is needed for different kinds of occupations?

This document suggests the kinds of information that could be developed to inform these choices and answer these questions. This is a "policy information proposal," not a synthesis of existing information.

One important approach to providing information of this kind is being undertaken by the National Assessment Governing Board (NAGB), the policy-making body of the National Assessment of Educational Progress (NAEP). NAGB has used panels of judges to set "achievement levels" for grades 4, 8, and 12, using a methodology often employed to set passing scores on tests. These are being issued first in mathematics, based on the 1990 NAEP mathematics assessment. It will be some time before they will be available for all subjects.

The extent to which these levels, or standards, will be used throughout the nation is yet to be seen. The NAGB effort represents one serious approach to providing information that can be used in establishing specific targets for achievement. But there are other approaches to informing the choices that have to be made, and the better and more varied the information, the sounder will be the decisions. To the extent that the information is convincing as to what students need to know, and what is feasible because it is actually being accomplished somewhere in the U.S., the greater will be the public's commitment to attaining the goals. While Missouri calls itself the "show me" state, this nickname applies to much of America as well.

In tandem with the NAGB achievement levels, the elements of this proposal, if implemented, would result in the following:

- The ability to set targets now for all subjects NAEP assesses at the 4th, 8th, and 12th grades, in terms of the percent of students at or above certain levels on the NAEP scale.

- Average scores for a set of schools demonstrating much higher achievement levels than what would be expected, based on the prevailing relationship in the United States between socioeconomic status and achievement. These would be lead schools that are proving that we can raise student performance now.

- The expectations of teachers of students who are assessed by the National Assessment of Educational Progress. These expectations would be elicited by asking a sample to identify the questions on the NAEP test that they would expect their students to answer correctly, based on what they have taught them. We would know the level of teachers' standards, the gap between them and students' achievement, and how teachers' expectations are responding to goals set for the year 2000.

- How new high achievement curricula (for example, curricula based on the new standards of the National Council of Teachers of Mathematics) translate into scale scores in NAEP, so we know where students stand in relation to these standards.

- The levels on the literacy scales required for
  - broad bands of occupations
  - specific, benchmark, entry-level jobs
  - such things as successful accomplishment of buying a week's groceries, purchasing insurance, or operating new high-tech appliances

The National Education Goals Panel is now engaged in a far-ranging exercise to determine the data the nation needs to track progress toward the established goals. But nothing comparable has been undertaken to create information to help establish specific targets and objectives as the decade progresses. This modest set of proposals is offered in this spirit, not for accountability to the goals, but for assistance in reaching them.

1. Panels of Judges to Set Achievement Levels

There have long been a number of methodologies for setting "cut points" on tests to establish passing scores. These have been used in a variety of ways to establish standards for achievement. In one way or another, they require the exercise of judgment, although they usually are accompanied by sophisticated statistical and psychometric analysis. Other approaches described in this document are designed to produce information that policymakers and educators take into account in making their judgments about achievement goals; the NAGB approach produces goals for them.

A heroic effort is under way by NAGB, using the NAEP assessments and responding to a congressional authorization in 1988, to identify "appropriate achievement goals" in subjects NAEP assesses. Congress did not specify approach, and there was little, if any, legislative history on what it had in mind.

The initial effort is to establish achievement levels in mathematics in grades 4, 8, and 12. In June 1990, NAGB appointed a panel of 63 judges, of whom about 70 percent were educators (representing mathematics teachers, college math instructors, principals, and state and district curriculum specialists). The remaining 30 percent were employers, civic group representatives, and interested citizens. The process has been extensive and included public hearings on the recommendations made by the panel of judges.

Gregory Anrig, president of Educational Testing Service, testified at a hearing conducted by NAGB on January 8, 1991. He began by saying that "I congratulate the National Assessment Governing Board for vigorously pursuing this complex task and for your efforts to involve appropriate constituencies in the process." He then spelled out a complete methodology he thought was necessary to establish levels that would stand up to criticism, advising NAGB to resist issuing levels until all steps of an accepted process had been completed. He established four major tasks to be accomplished:

1. Developing the competency statements
2. Obtaining empirical information to inform the standards
3. Setting the standards
4. Evaluating the process

Once NAGB announces the achievement levels, or standards, NAEP assessment results would be reported in terms of the percent of students reaching the standards at grades 4, 8, and 12. The contemplated levels are "basic," "proficient," and "advanced." An example of the proficient level at grade 8 follows:[1]

> Students at the proficient level should be able, with and without a calculator, to solve problems using fractions, decimals, percents, rates, proportions, similar figures, algebraic formulas and functions, and understand and use exponents. These learners should recognize elementary algebraic properties and be able to use algebraic procedures to solve equations and inequalities. For example, proficient learners should be able to solve problems involving measurement, understand and apply measures of central tendency and basic sampling techniques, and know the properties of plane and solid geometric figures. These students should be able to apply logical problem-solving strategies, such as working backward to a solution, making tables

[1]Quoting from descriptions available from NAGB in January 1991

and graphs, and extending more complicated patterns. It is appropriate that they should know when and how to use a calculator.

2. Goals as Proportions of Students Reaching NAEP "Anchor Points"

NAGB has chosen to use a judgment process to define what students should know and be able to do, as described in the previous section. Gregory Anrig, in his testimony of January 8, pointed out that the NAEP assessment has been designed to measure what students now know and can do. This introduces constraints, at least until the assessment is changed.

A simpler approach, based on what NAEP now does, is to use the "anchor points" established by NAEP beginning with the 1984 assessment. The judgment would involve setting goals for the percent of students who should reach these anchor points in a specified period of time.

While the NAGB is defining what students should know, the anchor points are a way of describing what they do know. NAEP identified tasks students (with a high degree of probability) can successfully perform, at 50-point intervals on the NAEP scale. Then, it had math educators look at these tasks at each level and generalize about what they had in common. For example, at level 300 in mathematics (on a scale of 0 to 500), the description is as follows:

> Level 300 - Moderately Complex Procedures and Reasoning. Learners at this level are developing an understanding of number systems. They can compute with decimals, simple fractions, and commonly encountered percents. They can identify geometric figures, measure lengths and angles, and calculate areas of rectangles. These students are also able to interpret simple inequalities, evaluate formulas, and solve simple linear equations. They can find averages, make decisions on information drawn from graphs, and use logical reasoning to solve problems. They are developing the skills to operate with signed numbers, exponents, and square roots.

For example, we know that the percent of 13-year-olds who reached this level was just 16 percent in 1986, compared to 18 percent in 1982 and 1976.[2] We could set goals in terms of agreement on a target for 1994, 1998, and so forth, such as 25 percent, or 33 percent, or 50 percent. The same could be done for Level 250 (Basic Operations and Beginning Problem Solving) and Level 350 (Multi-Step Problem Solving and Algebra).

This method could be used in the interim until levels are established by NAGB in all subjects at 4th, 8th, and 12th grade levels. (It has been three years since Congress authorized NAGB to set achievement goals, and they have just been completed in mathematics. A request for proposals

[2]However, level 300 was redefined by NAEP in 1990, so it would be necessary to start with 1990.

has just been issued to commence work in other subject areas.) Or, some may continue to be more comfortable with the empirically established anchor points than the judgmentally established achievement levels.

In November 1989, the Policy Information Center published Information for National Performance Goals for Education: a Workbook. This workbook, which utilized the approach described above, stated that

> *"While we have provided average proficiency scores (means), we have emphasized distributions for setting goals. This way, the wide variations among students of the same age and grade are recognized. The NAEP scales, by describing what students know and can do at each level on the scale, aids judgments about the percent of students who should attain a particular level. We can deal with questions such as: Do we propose to raise more students at the bottom toward the middle? Raise students in the middle toward the top?"*

Subsequently, when the national goals were issued in February 1991, they called for "raising achievement in every quartile." The "workbook" approach facilitates setting goals in those terms, and NAEP anchor points are now available for reading, writing, mathematics, science, history, civics, and geography.

3. Schools That Exceed Expectations

Education goals can seem abstract when they are created through some complicated technical procedure; in fact, they can seem so far from reality that they strain credibility. One way to establish believable goals is to show that there are schools already attaining them, right here in the early 1990s. We can be reasonably sure that such schools exist, but it is not so apparent that they can be easily identified.

It is hard to identify these exemplars because there is large variation in factors and conditions related to educational achievement in the U.S. The socioeconomic characteristics of student bodies vary. The resources available to schools vary. The majority-minority makeup of student bodies varies.

Statistical analyses can deal with these variations in terms of establishing their relationship to student achievement. The association between these factors and achievement can be quantified. Given what we know about a student body and a school, student achievement can be predicted with differing degrees of accuracy, and the "expected" level of achievement can be compared with the "actual" level. This approach has been used as far back as 1962 in Japan to see in which geographical areas the schools were doing better than, or worse than, expected. It is now used by the state of California.

While strong statistical associations will be found, there will be schools in which student performance exceeds what these associations predict (as well, of course, as schools performing less well than pre-

dicted). A statistical analysis using a large body of data, such as NAEP, could be used to establish the association and identify a set of schools exceeding expectations--not individual schools. The achievement levels of these schools represent levels that are attainable. Knowing what these levels are is information that could be used to establish realistic goals for education achievement, or at least interim goals toward more ambitious ones. In statistical terms, these schools would be called "outliers" in regression analysis.[3]

These school achievement levels could be clustered at different points along the continuum of student and school conditions. The average scores for a set of schools that considerably exceeded expected scores could be computed at each quartile of student and school conditions, say, the top 10 schools (of course, they would not be identified by name). A table could be produced such as the one below:

Table 1

	Math Scores (Median) for Eighth-Grade Students	
Student and School Conditions	**Actual Scores**	**Combined Score, Top Ten Schools Exceeding Expectation**
1st Quartile		
2nd Quartile		
3rd Quartile		
4th Quartile		

The experiences with outlier studies in the 1970s should be drawn upon in doing the kind of analysis described above. Large samples are necessary. Averaging scores from at least 10 schools will produce more reliable results.

4. What Teachers Expect

At the classroom level, where education takes place, achievement goals are set by the individual teacher. We know how these students score on NAEP. But how do students score relative to how their teachers expect them to score? And how do expectations of teachers compare with achievement goals set by others, including the National Education Goals Panel? And how are these teacher expectations changing?

[3] In the 1970s, there was a lot of interest in "outliers," often singling out individual schools. These studies ran into some problems, particularly because individual outlier schools were not very stable. Past experiences, as well as advances in statistical methods, will need to be drawn on for future analyses.

We can find out by asking a sample of teachers to identify the questions on the test that they would expect most of their students to answer correctly, based on what they have taught them and what they know about their students' prior preparation.[4] This would not be an attempt to match the scores of students in a class with the expectations of their particular teachers (teacher scores would be confidential, and individual teachers would not be identified). Instead, the average of teacher-expected scores for a subject at a grade level could be compared with that of the students, and teacher expectations tracked over a period of time.

We need to have goals in terms of what teachers expect, as well as goals what students know and can do. Raising these expectations, based solidly on what is taught, will be a key to raising achievement and reaching national goals. Using the test itself is a direct way to identify these expectations; it would enable completing the blanks in Table 2. Such a system would permit going beyond national averages, to geographic differences or subpopulations.

These expectations are teachers' immediate goals; their goals, and how they change, will be leading indicators of achievement changes. Of course, when a teacher analyzes a NAEP test for this purpose, it will not be a perfect measure of what a student has been taught (and of course, how well he or she has been taught); as a practical matter, no such perfect measure is possible. But it is about as close as we are likely to get.

Table 2
Teacher Expected Scores

	4th Grade			8th Grade			12th Grade		
	Nation	Region	State	Nation	Region	State	Nation	Region	State
Reading	–	–	–	–	–	–	–	–	–
Writing	–	–	–	–	–	–	–	–	–
Mathematics	–	–	–	–	–	–	–	–	–
Science	–	–	–	–	–	–	–	–	–
History	–	–	–	–	–	–	–	–	–
Civics	–	–	–	–	–	–	–	–	–
Geography	–	–	–	–	–	–	–	–	–

[4]This is an oversimplication. In practice, a methodology would likely be used in which the teachers rate the items in terms of a percent expected to get them correct. But standard methodologies do exist.

5. Levels Necessary for a High Achievement Curriculum

One question to ask when choosing a level for achievement goals is: What level on a NAEP scale is associated with mastery of a specific text or curriculum that is judged to be a good one? In a sense, a procedure would be followed in which the text (or curriculum) would "take" the NAEP assessment. That is, if an individual mastered what was in the text or curriculum, what score would he or she get on a NAEP scale?

A related question is where does the person need to be on a NAEP scale at the end of one academic year to begin a text/curriculum at the beginning of another?

Where would that person be on the NAEP scale after successfully completing, in the 12th grade, the curriculum called for by the National Council of Teachers of Mathematics?

At the "top" level of achievement, where is a passing grade (3) on an Advanced Placement examination in terms of a NAEP scale in that subject?[5]

These are the kinds of questions that are likely to be in the minds of a panel of judges asked to establish a cutscore in setting standards. To a considerable degree, however, these are empirical or analytical questions that can be answered with more than the approximations of a panel of experts, with widely different backgrounds, examining assessment items and making judgments. (And, if such panels had such information, they would be able to make better judgments.)

The figure on the next page illustrates the kind of information that could be developed, with varying degrees of precision.

6. Setting Goals for Literacy

One of the national goals set by the governors and the president is that all American adults be literate by the year 2000. Employers are concerned about insufficient literacy. A national movement has been under way for nearly a decade to wipe out illiteracy.

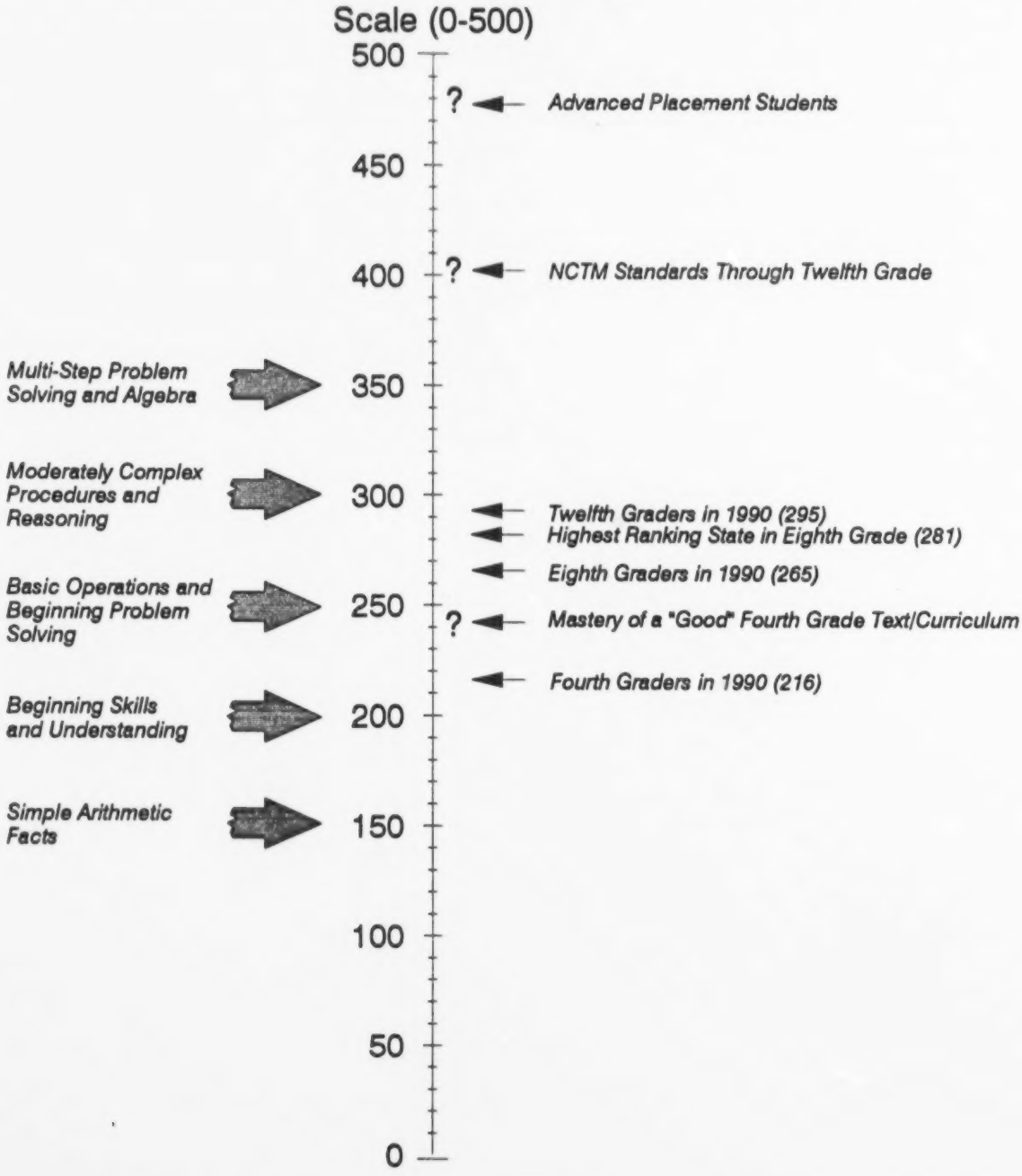
But what constitutes literacy? What would be a level all adults should reach by the year 2000? Don't different life tasks have different literacy requirements? What do we need to know to be able to set useful and realistic literacy goals?

In the measurement of literacy, a consensus is emerging around the concepts and methods used in the Young Adult Literacy Study conducted by Educational Testing Service in 1985 (reported in 1986) for NAEP. ETS will undertake a similar study for all adults, in 1992. It will be called the National Adult Literacy Survey (NALS).[6]

[5] Answering this would probably require giving the NAEP assessment to a sample of students who had taken the AP examination.
[6] This will be carried out under contract with the National Center for Education Statistics.

Figure 1

Levels of Mathematics Proficiency
(National Assessment of Educational Progress)



These studies identify literacy in three relatively distinct areas[7]:

- *Prose literacy.* Reading and interpreting prose such as that found in newspaper articles, magazines, and books.
- *Document literacy.* Identifying and using information located in documents such as forms, tables, charts, and indexes.
- *Quantitative literacy.* Applying numerical operations to information contained in printed material such as a menu, a checkbook, or an advertisement.

The three types of literacy are measured on a scale of 0 to 500. Of the three, research has identified document literacy as being the kind most encountered in workplaces. In Figure 2, the results of the 1985 study are reported for young adults (21-25) who graduated from high school but did not go on to college.

The kinds of tasks these young people are likely to be able to do are described at different points along the scale.

As can be seen in Figure 2, 97 percent are at the 200 level or higher, where the representative task is being able to enter personal information on a job application, and practically all reached the level of entering a caller's number on a phone message form. But at higher levels on the scale, represented by tasks that are moderately complex, the ranks thin out quickly: Only half reached the 300 level, represented by a task requiring following directions from one location to another using a map. Just 11 percent reached the 350 level, characterized by a task using a bus schedule to select the appropriate bus for given departures and arrivals. A similar picture emerges on the other two literacy scales.

Few are illiterate, in the sense of being able to do none of the tasks. Literacy is a continuum, and no single point on the scale neatly and simply separates the literate from the illiterate. But the question must be asked: Literate for what function, what activity, what task, and what job?

In the following section, we suggest several kinds of information that would help policymakers and others who must set standards in making informed judgments.

A. Occupations and Literacy

One way to look at literacy requirements is to look at the actual level of literacy of people who are performing particular activities. For example, what are the literacy levels of people who are now employed in particular occupations? This approach can be illustrated, in a rough way, by using the data from the 1985 Young Adult Literacy Study. In that study, the occupations of employed young adults were identified.

[7]See Workplace Competencies: Measuring Literacy and Employment Readiness, by Paul E. Barton and Irwin Kirsch, Government Printing Office, 1990.

Figure 2 — Percentage of high school graduates scoring at or above selected levels of proficiency in prose literacy, with tasks illustrative of various levels: 1986

Proficiency scale	Percent at or above selected levels	Example tasks at various proficiency levels
500		
400		
375	3.2 (0.8)	371 — Orally interpret distinctions between types of employee benefits
350	12.2 (1.3)	340 — State in writing argument made in lengthy newspaper column
325	26.6 (1.8)	
300	48.4 (1.7)	313 — Locate information in a lengthy news article
275	66.4 (1.4)	277 — Write a letter to state that an error has been made in billing
250	81.4 (1.3)	262 — Locate information in sports article
225	91.2 (0.9)	
200	96.7 (0.6)	199 — Write about a job one would like
0		

NOTE: High School graduates include those who had some postsecondary experience, but no degree. Standard errors are shown in parentheses.

SOURCE: National Assessment of Educational Progress, *Literacy: Profiles of America's Young Adults, 1986.*

In Table 3, we have reproduced a table published in 1990 in Workplace Competencies: Measuring Literacy and Employment Readiness. Using the document literacy scale, the table shows the average document proficiency level for young adults employed in each of nine occupations who reported working full-time for a full year. For example, the average scale score for laborers was 277 (the lowest), and the average scale score for sales workers was 297. Table 2, shows what these scores mean in terms of representative tasks. Table 3, shows how various subgroups are arrayed along the scale.

Young adult laborers are at about the 275 level, where they can do things such as use an index from an almanac. Seventy-three percent of all young adults (not just those employed full-time) are at or above this level, but just 40 percent of high school dropouts score this high or higher.

A minimum goal of 275 would be approximately the average level of young employed laborers. Is that a minimum we should strive for, meaning that we need to get about one-fourth of the young adult population up to it? Or should we set a more modest goal of 250, with 16 percent of all young adults below that level (and larger proportions of Black and Hispanic young adults)? In Workplace Competencies, similar information is presented for the prose and quantitative literacy scales.

As we said, these data are very rough. The nine occupations are very wide bands and often include a large number of specific occupations, with widely varying literacy requirements. For the young adults employed in each of these occupations, there is a distribution of scores; here we have used only the average. These data are not very useful to set goals for preparing for specific occupations, but only to inform those setting broad goals for a nation, a state, or a community. The information would be improved if the samples were larger, permitting more detailed breakouts of occupations and a look at the distribution itself, selecting a narrower range of scores and excluding the extremes. And the data are for people who hold those jobs, not necessarily for the skill levels employers seek. But it is an approach that could be improved.

An expansion of such literacy assessment information will be available this summer, after the Workplace Literacy Project is completed by ETS, under contract with the U.S. Department of Labor. It will provide a literacy profile of three populations--applicants at the Public Employment Service, unemployment insurance claimants, and enrollees in Job Training Partnership Act (JTPA) programs. Information will be available about jobs previously held. The project will also enable looking at the literacy levels of enrollees in different kinds of JTPA programs, suggesting an approach to examining the literacy levels necessary for such training programs. Also, the National Adult Literacy Survey (NALS) will be carried out in 1992, providing relevant information on all adults.

Table 3 —Percentages of young adults at or above selected points on the document literacy scale: 1986

Average proficiency of young adults reporting full time employment by various occupational categories		Selected points on the scale	Total	Race/ethnicity			Levels of education			
				White	Black	Hispanic	0–8 years	9–12 years	H.S. diploma and/or more	2 or 4 year degree or more
		500								
		350	**20.2** (1.3)	**24.3** (1.6)	**2.5** (0.5)	**6.7** (2.0)	**0.7** (0.7)	**0.8** (0.5)	**10.9** (1.3)	**40.7** (1.9)
323 (5.4)	Professional									
311 (6.7)	Technical	325	**37.6** (1.6)	**44.0** (1.8)	**9.0** (1.1)	**20.8** (3.1)	**0.7** (0.7)	**7.5** (1.4)	**28.0** (1.7)	**63.2** (1.8)
308 (3.7)	Manager									
301 (4.3)	Clerical									
297 (4.8)	Sales	300	**57.2** (1.7)	**65.4** (1.7)	**19.8** (1.5)	**37.0** (4.1)	**11.0** (9.6)	**22.0** (2.9)	**50.2** (2.1)	**81.8** (1.5)
286 (5.2)	Service									
281 (5.1)	Operative									
279 (5.7)	Craft	275	**73.1** (1.2)	**80.8** (1.1)	**38.7** (2.6)	**54.7** (3.8)	**21.1** (12.4)	**39.5** (3.6)	**70.6** (1.5)	**91.4** (1.0)
277 (8.6)	Laborer									
		250	**83.8** (1.0)	**89.9** (0.8)	**55.5** (2.7)	**69.0** (3.4)	**31.5** (10.7)	**59.1** (3.9)	**83.4** (1.2)	**96.0** (0.7)
		225	**91.0** (0.8)	**95.0** (0.7)	**71.0** (2.2)	**84.4** (1.6)	**47.3** (9.5)	**72.0** (3.3)	**91.8** (0.8)	**98.9** (0.3)
		0								

NOTE: Numbers in parentheses are estimated standard errors.

SOURCE: Unpublished data from the National Assessment of Educational Progress, Young Adult Literacy Study, 1986.

BEST COPY AVAILABLE

B. Literacy Audits

The approach just described relies on information from large-scale assessments of adult literacy, linking the assessments with information about the occupations of people assessed. A much more precise, and more costly, approach is to audit the literacy requirements of work in a specific job.

In 1990 an ETS team completed the Job Literacy Project, developing and testing a new methodology called Job Literacy Analysis, a modification of the job analysis procedures used successfully by ETS over the last 15 years. The project sets out to describe the literacy requirements of five entry-level jobs:

- Food service worker
- Nurse assistant
- Secretary
- Word processor
- Data processing equipment repairer

For each job, the project produced a "job literacy description."

The specific documents and materials used in each entry-level job were gathered and analyzed. In the case of food-service workers, these included sandwich lists, food scales, charts, schedules, memos or notices, operational instructions, reservation forms, diagrams, order sheets, menus, recipes, labels, food production orders, and safety sheets. The specific tasks these workers must perform were established (for example, "mark price code or label on wrapped sandwiches").

There are a number of possible uses of such literacy audits, including creating tests and developing training programs. Through additional analysis, at some cost, the audit material can be used to locate the job on the three literacy scales previously described. This use is relevant here. Knowledge of literacy requirements for a set of jobs spanning the occupational distribution would provide objective information for setting realistic goals for literacy. These goals would be tied to the literacy scales being used in large-scale assessments, that produce literacy profiles for the nation, and increasingly, for individual states as well.

Such benchmarks can be created now, with relatively small expense, using the literacy audits described above, and benchmarks for higher level occupations can be established with additional audits.

Such information could be used to establish literacy targets for specific individuals preparing to enter particular occupations. However, we are interested in their use for establishing policy goals for whole educational systems, states, and the nation, as well as goals for JTPA programs, JOBS programs under the Welfare Reform Act, and "second-chance" institutions for high school dropouts.

C. Literacy for Living

Setting literacy goals is important for successful employment preparation, yet this is only one area in which literacy is important for negotiating life. The literacy tasks used in the 1985 large-scale literacy assessments (and to be used in 1992) span most activities adults engage in. We talk about how the "information age" and the higher technological literacy required for using consumer products has raised literacy requirements. But we could establish this factually, and track change by applying the audit approach previously described.

For example, what levels of prose, document, and quantitative literacy are required to intelligently perform:

- A week's grocery shopping?
- Understanding food coupons?
- Reading sales ads in the paper?
- Figuring out which size of a particular product has the lowest unit cost?

The tasks involved in a week's grocery shopping can be identified, and accomplishing them can be located on the literacy scales. The same can be done purchasing car insurance, or understanding the health care system, or using VCRs.

With modest effort, we can become more literate about the literacy requirements of our society. Despite the large amount of public discussion about literacy in the last few years, we know very little about how much is required.

* * *

The information system to help educators, policymakers, and the public generally to establish specific education goals and targets is now very primitive, even as our statistical information is increasing. Progress toward the goals for the year 2000 will require better information, of the kinds sketched out in this paper, information for establishing believable targets--and interim targets--that a pragmatic people can become committed to.